

REMARKS/ARGUMENTS

Summary

In this Office Action, claims 2, 4, 5, and 12 stand objected to and claims 1-10, 12-20, and 22-27 stand rejected. Claims 2 and 4 stand objected to as being of improper dependent form. Claims 5 and 12 stand objected to for being identical. Claims 1-6, 8-20, 22, and 24-27 stand rejected under 35 U.S.C. § 103 as being unpatentable over Applicant's Admitted Prior Art (hereinafter "*AAPA*") in view of U.S. Patent 6,784,555 issued to Watson et al. ("*Watson*") or U.S. Patent 6,056,846 to Kuhl et al. ("*Kuhl*"). Claims 1-6, 8-20, 22, and 24-27 stand rejected under 35 U.S.C. § 103 as being unpatentable over *AAPA* in view of U.S. Patent 6,136,137 issued to Farnworth ("*Farnworth*") and *Watson*. Claims 7 and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over *AAPA* as modified by *Watson* or *Kuhl* or *APAA* as modified by *Farnworth* and *Watson*, and further in view of U.S. Patent 6,273,791 issued to Kataoka et al ("*Kataoka*"). Thus, claims 1-10, 12-20, and 22-27 currently are pending.

Claim 12 has been cancelled without prejudice, thereby rendering moot the rejection thereof. Claims 1 and 16 have been amended to clarify the claim language without introducing new matter. Applicant respectfully traverses the remaining rejections.

Claim Objections

Claim 2 is objected to as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant traverses this objection.

Claim 2 recites, in part, "said allowing the adhesive gel material to hold the semiconductor wafer to the platform comprises using an adhesive property of the adhesive gel material to hold the semiconductor wafer to the platform." It is asserted in the Office Action that claim 2 merely further describes in a narrative form, a function of the gel. Applicant however respectfully disagrees for at least the following reasons.

First, in general, adhesive property required to hold something may depend on conditions or requirements for a desired purpose. On the other hand, in general, an adhesive may have several properties in addition to an adhesive property. Thus, among these several properties of an adhesive, using an adhesive property to hold something is a positive choice.

In fact, claim 1 recites releasing the semiconductor wafer, substantially free of the adhesive gel material, from the platform. So the adhesive gel material is allowed to hold or release the semiconductor wafer, and thus, using an adhesive property to hold the semiconductor is a positive choice and further limits the subject matter of claim 1. Accordingly, Applicant respectfully requests that this objection be withdrawn.

Claim 4 is objected to for the same reason as claim 2. Applicant traverses this objection. Claim 4 recites, in part, providing substantial surface contact between the adhesive gel material and the first side of the semiconductor wafer. Claim 1, from which claim 4 indirectly depends, recites “applying said adhesive gel material to at least a portion of a first side of a semiconductor wafer.” Therefore, providing substantial surface contact adds a further limitation. In addition, in general, using an adhesive property to hold something is not necessarily limited to providing substantial surface contact. For example, any one or more of temperature, density, or surface roughness may be factors to hold in addition to or alternatively to providing substantial surface contact. Therefore, providing substantial surface contact between the adhesive gel material and the first side of the semiconductor wafer as recited in claim 4 is a positive choice and further limits a previous claim. Accordingly, Applicant respectfully requests that this objection be withdrawn.

Claims 5 and 12 are objected for being identical. In response, Applicant has cancelled claim 12 rendering moot the objections thereof.

Claim Rejections under 35 U.S.C. § 103(a) – AAPA/Watson/Kuhl

Claims 1-6, 8-20, 22, and 24-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *AAPA* in view of *Watson* or *Kuhl*. Applicant traverses this rejection.

Claim 1 is directed to a method, comprising;

providing an adhesive gel material, said adhesive gel material including semi-solid particles within and further forming a membrane surface;

applying said adhesive gel material to at least a portion of a first side of a semiconductor wafer having first and second sides, the particles substantially preventing the membrane surface from collapsing when a vacuum suction is applied to the first side of the semiconductor wafer so that the semiconductor wafer is released;

positioning the semiconductor wafer onto a platform with the first side facing the platform and with the adhesive gel material between the first side and the platform to allow the adhesive gel material to hold the semiconductor wafer to the platform;

grinding the second side of the semiconductor wafer; and

allowing the adhesive gel material to release the semiconductor wafer, substantially free of the adhesive gel material, from the platform.

Thus, according to claim 1, an adhesive gel material is applied, being allowed to hold and release the semiconductor wafer. When a vacuum suction is applied to the first side of the semiconductor wafer, the semiconductor wafer is released. On the other hand, *AAPA* discloses wafer-grinding in general, in which backgrind tape or grinding protection tape is used to protect integrated circuits, etc., and a vacuum chuck applies a suction or vacuum to hold the wafer and grinding protection tape to a grinding chuck. *See, e.g.*, page 5, lines 10-17. In other words, the backgrind tape or grinding protection tape, and the vacuum are used for protection, or holding respectively. Also, although *AAPA* discloses applying vacuum, it is activated to hold a wafer, not to release the wafer.

Therefore, *AAPA* cannot be said to disclose or suggest applying an adhesive gel material in the way as recited in claim 1.

Watson does not remedy *AAPA*'s deficiency. Rather, *Watson* discloses an adhesive including inorganic insulator particles, applied between a substrate and a die in a fully packaged device. See, e.g., *Watson*, Fig. 1 and Fig. 10. Although *Watson* discloses spacer particles in the adhesive, *Watson* does not disclose or suggest a membrane surface formed by the adhesive gel material nor the particles substantially preventing the membrane surface from collapsing when a vacuum suction is applied to the first side of the semiconductor wafer so that the semiconductor wafer is released. *Kuhl* does not remedy *AAPA*'s deficiency as the same reasons similar to those set forth regarding *Watson*. Accordingly, for at least the foregoing reasons, claim 1 is patentable over *AAPA*, *Watson*, and *Kuhl*, whether alone or in combination.

Claim 16 recites similar limitations as claim 1 and therefore also is allowable over *AAPA*, *Watson*, and *Kuhl*.

Claims 2-6, 8-15, 17-20, 22, and 24-27 depend on either independent claim 1 or 16, incorporating their recitations respectively. Thus, for at least the same reasons, claims 2-6, 8-15, 17-20, 22, and 24-27 also are patentable over *AAPA*, *Watson*, and *Kuhl*, whether alone or in combination.

Claim Rejections under 35 U.S.C. § 103(a) – *AAPA/Farnworth/Watson*

Claims 1-6, 8-20, 22, and 24-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *AAPA* in view of *Farnworth* and *Watson*. Applicant traverses this rejection.

Farnworth does not remedy above mentioned deficiencies of *AAPA* or *Watson*. *Farnworth* discloses an adhesive used in conjunction with cylindrical rods or woven materials, which are separate from and sit underneath the adhesive layer to support the adhesive layer upon application of a vacuum suction. *Farnworth* does not disclose or

suggest semi- solid particles within the adhesive gel material, the particles substantially preventing the membrane surface from collapsing when a vacuum suction is applied to the first side of the semiconductor wafer so that the semiconductor wafer is released as recited in claim 1. In addition, neither cylindrical rods nor woven materials can be said to be particles, thus provide different surface contact towards a semiconductor wafer to be released when a vacuum is activated. The contacting surface of the adhesive layer would be a series of lines when the adhesive layer is supported by cylindrical rods or woven materials, which would require more releasing force than points contacts. Accordingly, for at least the foregoing reasons, claim 1 is patentable over *AAPA* in view of *Farnworth* and *Watson*, whether alone or in combination.

Claim 16 recites similar limitations as claim 1 and therefore also is allowable over *AAPA* in view of *Farnworth* and *Watson*.

Claims 2-6, 8-15, 17-20, 22, and 24-27 depend on either independent claim 1 or 16, incorporating their recitations respectively. Thus, for at least the same reasons, claims 2-6, 8-15, 17-20, 22, and 24-27 also are patentable over *AAPA* in view of *Farnworth* and *Watson*, whether alone or in combination.

Claim Rejections under 35 U.S.C. § 103(a) – *AAPA/Kataoka*

Claims 7 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *AAPA* as modified by *Watson* or *Kuhl* or *AAPA* as modified by *Farnworth* and *Watson* and further in view of *Kataoka*. As noted previously, claims 1 and 16 are allowable over *AAPA*, *Farnworth*, *Watson*, and *Kuhl*. *Kataoka* does not remedy the above-discussed deficiencies of *AAPA*, *Farnworth*, *Watson*, and *Kuhl* and, thus, for at least the same reasons, claims 1 and 16 remain allowable over *AAPA*, *Farnworth*, *Watson*, and *Kuhl*, even if combined with *Kataoka*. Claims 7 and 23 depend from one of claims 1 and 16 thereby incorporating the limitations contained therein. Therefore, claims 7 and 23 are patentable over *AAPA*, *Farnworth*, *Watson*, and *Kuhl* even if combined with *Kataoka* and thus are in proper form for allowance.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that claims 1-10, 13-20, and 22-27 are in condition of allowance. Thus, entry of the offered amendments and early issuance of Notice of Allowance is respectfully requested.

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,
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